

REMARKS

Claims 1-66 are pending in this application.

Claims 1-66 are rejected.

The office action dated June 4, 2007 indicates that claims 47-66 are rejected under 35 USC §101 as being directed to nonstatutory subject matter. The '101 rejection has been rendered moot by the amendments above to base claims 47 and 56, which now recite computer-readable memory encoded with software. Withdrawal of the '101 rejections is respectfully requested.

The office action indicates that claims 7-9, 29-46, and 56-66 are rejected under 35 USC §112, second paragraph, because claims 7, 9, 29, 38 and 56 are indefinite. The '112 rejections of claims 7, 9 and 56 have been rendered moot by the amendments above.

The '112 rejections of claims 29 and 38 are respectfully traversed. These claims recite computer memory encoded with a virtual machine monitor, which is software. Please see paragraph 19 of the specification, which states "The software layer 111 includes an OS or OS instances 112, a VMM 114, and applications 116. The VMM 114 runs between the raw hardware layer 110 and the operating system instances 112." Therefore, the specification makes it clear how memory is encoded with a virtual machine monitor.

Claims 13, 23, 50 and 61 have been amended to correct trivial errors.

Base claims 1, 29, and 47 are rejected under 35 USC §102(b) as being anticipated by Bugnion U.S. Patent No. 6,075,938. The '102 rejection is respectfully traversed.

Claim 1 recites a method for a computer including an I/O device. The method includes using a virtual machine monitor to commence virtualization of the I/O device at runtime.

In contrast, Bugnion's virtual machine monitor appears to virtualize hardware from bootup to shutdown (see col. 4, lines 24-25). As a result, overhead is incurred even when virtualization is not necessary. Thus Bugnion's VMM can add unnecessary overhead to the computer.

Bugnion attempts to minimize this overhead such that "the overheads imposed by virtualization are modest both in terms of processing time and memory footprint" (co. 7, lines 39-43). In a paragraph starting at col. 8, line 43, Bugnion lists several features that minimize overhead of a virtual machine monitor. None of these features includes using a virtual machine monitor to commence virtualization of an I/O device at runtime.

The office action cites a passage at col. 14, lines 32-34. However, that passage simply describes how an I/O device is virtualized. The passage does not describe when an I/O device is virtualized.

Thus, Bugnion does not teach or suggest using a virtual machine monitor that commences virtualization of the I/O device at runtime. Accordingly, claim 1 and its dependent claims 2-16 should be allowed over Bugnion.

Base claim 29 also recites a virtual machine for commencing virtualization of an I/O device at runtime. For the reasons above, base claim 29 and its dependent claims 30-37 should be allowed over Bugnion.

Base claim 47 recites software for causing a computer to commence virtualization of an I/O device at runtime. For the reasons above, base claim 47 and its dependent claims 48-55 should be allowed over Bugnion.

Base claims 17, 38 and 56 are rejected under 35 USC §103(a) as being unpatentable over Bugnion in view of Kozuch U.S. Publication No. 2002/0083110. This rejection is respectfully traversed.

Base claim 17 recites a method for a computer including hardware, a virtual machine monitor running on the hardware, and an operating system running on the virtual machine monitor. The hardware includes an I/O device that is already virtualized by the virtual machine monitor. The method comprises devirtualizing the I/O device at runtime.

The office action acknowledges that Bugnion doesn't disclose devirtualizing an I/O device at runtime. However, the office action cites a passage in Kozuch at paragraph 27, lines 7-11, states that Kozuch teaches devirtualizing resources when a virtual machine monitor becomes idle, and concludes that it would be obvious to devirtualize an I/O device at runtime.

The office action does not establish prima facie obviousness of claim 17 because it does not provide evidence that supports its conclusion. Kozuch is silent about devirtualizing an I/O device at runtime. The cited passage merely states that a virtual machine can be stopped if it is quiescent. Thus, Kozuch discloses the conventional approach of virtualizing hardware from bootup to shutdown.

The combined teachings of Bugnion and Kozuch do not teach or suggest using a virtual machine monitor to devirtualize an I/O device at runtime. Accordingly, base claim 17 and its dependent claims 18-28 should be allowed over the combined teachings of Bugnion and Kozuch.

Base claim 38 also recites a virtual machine for devirtualizing an I/O device at runtime. For the reasons above, base claim 38 and its dependent

claims 39-46 should be allowed over the combined teachings of Bugnion and Kozuch.

Base claim 56 recites software for causing a computer to devirtualize an I/O device at runtime. For the reasons above, base claim 56 and its dependent claims 57-66 should be allowed over the combined teachings of Bugnion and Kozuch.

The examiner is respectfully requested to withdraw the rejections of the claims. The examiner is encouraged to contact the undersigned to discuss any issues that might remain.

Respectfully submitted,

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